

Application No. 10/568,727

REMARKS

This application is directed to a chemical-mechanical polishing composition and method.

Claims 21, 24, 30, 31 and 42 are rejected under 35 U.S.C. §102(e) as allegedly anticipated by Nishida *et al.* (U.S. 6,669,748). The Office Action states that the Nishida reference discloses the elements of the claimed invention. In particular, the Office Action asserts that Nishida discloses Ca ions in the dispersion liquid in a concentration which reads on the pending claims.

The applicants respectfully disagree. "Anticipation requires the presence in a single prior reference disclosure of each and every element of the claimed invention, arranged as in the claim." *Lindemann Maschinenfabrik GmbH American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)). The identical invention must be shown in as complete detail as is contained in the ...claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989); MPEP § 2131. Here, Nishida fails to disclose the limitation of the claimed concentration of at least one alkaline metal earth selected from the group consisting of calcium, strontium, and mixtures thereof; based on the total weight of the polishing composition. The Nishida reference discloses silica particles that include ions other than sodium, in the range of 300 ppm to 2 weight % of the silica particle. There is no specific disclosure for concentration of calcium or strontium ions in the polishing composition, as specified in the pending claims. The range of 300 ppm to 2 wt%, as cited by the Office Action, is for **all other ions**, and are stated as being as a wt% of the silica particle, not of the polishing composition. In fact, the citation given on page 7 of the Office Action clearly states "ions other than Na is less than 300 ppm, a quantity of cations **on a surface of the silica particle.**" Therefore, the Nishida reference cannot be anticipatory to the pending claims because the identical invention was not shown in as complete detail as is contained in the claim. Applicants respectfully request that the rejection under 35 U.S.C. §102 be withdrawn.

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Claim 39 is rejected under 35 U.S.C. §103(a) as allegedly being obvious over the Nishida reference in view of Tsuchiya *et al.* (U.S. Published Application No. 2001/0006224). The Office Action states that the Nishida reference fails to disclose the limitation that wherein the oxidizing agent is present in the polishing composition in an amount of about 0.5 to about 8% based on the total weight of the polishing composition. The Office Action uses Tsuchiya to provide the teaching of a slurry comprising 2.5 wt% of hydrogen peroxide as an oxidizing agent.

Applicants respectfully traverse the obviousness rejection because the combination of references fails to teach or suggest all of the claim limitations. In particular, the combination of references fails to teach or suggest the claimed concentration of at least one alkaline metal earth selected from the group consisting of calcium, strontium, and mixtures thereof; based on the total weight of the polishing composition. The deficiencies of the Nishida reference have been described above in relation to the anticipation rejection. The Tsuchiya reference teaches a polishing slurry for a substrate comprising an insulating film and a tantalum-containing metal film on the insulating film. Tsuchiya does teach that an oxidizing agent may optionally be added at at least 0.01 wt% and less than 15 wt%, for enhancing polishing of a conductive metal film formed on a barrier metal film. Whatever else the Tsuchiya reference teaches; it does not teach the claimed concentration of at least one alkaline metal earth selected from the group consisting of calcium, strontium, and mixtures thereof, based on the total weight of the polishing composition; and therefore does not cure the deficiencies of the Nishida reference. The combination of the two references fails to teach or suggest all of the claim limitations and therefore a *prima facie* case of obviousness is not established.

Claims 64, 65, 74, 75, 81, 83 and 86 are rejected under 35 U.S.C. §103(a) as allegedly obvious over the Tsuchiya application in view of the Nishida reference. The Office Action states that Tsuchiya discloses a method of polishing a substrate that discloses some of the limitations of the pending claims. The Office Action states that Tsuchiya fails to disclose that the polishing composition comprises about 5×10^{-3} to about 10 mmoles/kg of calcium based on the total weight of the polishing composition. The Office Action argues that Nishida discloses a dispersion liquid for polishing comprising 300 ppm of calcium ions. The Office Action then asserts that a person of skill in the art

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would have found it obvious to modify the Tsuchiya composition with 300 ppm of calcium.

Applicants respectfully disagree. As set forth above in the anticipation rejection, applicants assert that Nishida does not disclose the claimed concentration range for calcium based on the total weight of the polishing composition. The Nishida reference describes a concentration of ions other than sodium, as a concentration in a silica particle. That concentration of other ions in a silica particle is 300 ppm. The Nishida reference does not teach or suggest 300 ppm Ca based on the total weight of the polishing composition, as required by the pending claims. Therefore, the Nishida reference does not cure the deficiency of the Tsuchiya reference and the combination of the cited references does not disclose or suggest all of the claim limitations.

For the above mentioned reasons, the applicants assert that claims 21, 24, 30, 31 39, 42, 64, 65, 74, 75, 81, 83, and 86 are not anticipated by, nor are obvious over the cited references. Applicants respectfully request that the rejections under U.S.C. §102 and §103 be withdrawn.

If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



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